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(54) Title: A PRINTED CIRCUIT BOARD SEPARATOR FOR AN ELECTROCHEMICAL FUEL CELL

(57) Abstract

A proton exchange membrane (PEM)–type fuel cell is formed from layered undulate MEA structures and separator plates alternating with each other in the stack dimension so that each layered MEA structure is disposed between and attached to an associated pair of separator plates so as to form at least one discrete conduit on each side of each layered MEA structure through which conduit reactant gas may be circulated. Each layered MEA structure is formed from proton exchange membrane material sandwiched between a pair of spaced–apart current collectors with electro–catalyst particles between the membrane material and each current collector so that the membrane material and electro–catalyst particles fill the space between the current collectors, forming together with the current collectors a layered MEA structure. Each separator plate is formed from a non–conductive substrate overlaid on each surface by a selected pattern of conductive paths, paths on one side of the substrate being connected by vias to paths on the other side of the substrate, the paths being attached to the current collectors of the layered MEA structures on either side of the separator plate.